

CLAIMS

Now, therefore, the following is claimed:

1. A network router, comprising:

a layer 1 portion having a first communication interface and a second communication interface, said first communication interface configured to communicate with a first network over a first data path and said second communication interface configured to communicate with a second network over a second data path;

a layer 3 portion having a routing table, said layer 3 portion configured to provide a plurality of data packets destined for a particular destination;

a layer 2 portion configured to interface at least one of said data packets with said first communication interface; and

switching logic configured to automatically initiate a layer 2 switch such that said layer 2 portion begins to interface said data packets with said second communication interface in lieu of said first communication interface, wherein said layer 2 switch is transparent to said layer 3 portion.

2. The router of claim 1, where said switching logic is configured to automatically initiate said layer 2 switch in response to a detection of an error condition associated with said first data path, and wherein said switching logic is further configured to automatically initiate another layer 2 switch, in response to a detection that said error condition is resolved, such said layer 2 portion begins to interface said data packets with said first communication interface in lieu of said second communication interface.

3. The router of claim 1, wherein said second communication interface is configured to communicate using point-to-point protocol (PPP).

4. The router of claim 1, wherein said first data path comprises a T1 link.

5. The router of claim 4, wherein said second communication interface comprises a modem.

6. A network router, comprising:

a first protocol stack configured to provide a plurality of data packets to be transmitted by said router to a particular destination;

a second protocol stack;

a third protocol stack;

a plurality of network interfaces configured to receive data packets from said first protocol stack, wherein said first protocol stack is configured to provide each of said plurality of data packets to one of said network interfaces; and

switching logic configured to receive each of said plurality of data packets from said one network interface, said switching logic configured to provide at least one of said plurality of data packets to said second protocol stack and to provide, in response to a detection of an error condition, at least one other of said plurality of said data packets to said third protocol stack.

7. The system of claim 6, further comprising:

a first communication interface configured to transmit, over a first data path to said particular destination, each of said plurality of data packets provided to said second protocol stack; and

a second communication interface configured to transmit, over a second data path to said particular destination, each of said plurality of data packets provided to said third protocol stack.

8. The system of claim 7, wherein said protocol stacks, said network interfaces, said switching logic, and said communication interfaces are each integrated within a housing unit.

9. The router of claim 6, wherein said first protocol stack is within a layer 3 portion of said router, and wherein said second and third protocol stacks are both within a layer 2 portion of said router.

10. The router of claim 6, wherein said switching logic is configured to provide at least one of said plurality of data packets to said second protocol stack in response to a determination that said error condition has been resolved.

11. A method for use in a network router, comprising the steps of:

providing, from a layer 3 portion of said network router, data packets destined for a particular destination;

interfacing a first plurality of said data packets with a first communication interface of a layer 1 portion of said network router;

communicating said first plurality of data packets from said first communication interface over a primary data path;

detecting an error condition associated with said primary data path;

automatically performing a layer 2 switch in response to said error condition;

interfacing, in response to said layer 2 switch, a second plurality of said data packets with a second communication interface of said layer 1 portion; and

communicating said second plurality of data packets from said second communication interface over a backup data path,

wherein said layer 2 switch is transparent to said layer 3 portion.

12. The method of claim 11, further comprising the steps of:

automatically initiating a second layer 2 switch in response to a detection that said error condition has been resolved;

interfacing, in response to said second layer 2 switch, a third plurality of said data packets with said first communication interface; and

communicating said third plurality of data packets from said first communication interface over said primary data path.

13. The method of claim 11, wherein said communicating said second plurality of data packets is performed using point-to-point protocol (PPP).

14. The method of claim 11, wherein said second communication interface comprises a modem.

15. The method of claim 14, wherein said primary data path comprises a T1 link.

16. A method for use in a network router, comprising the steps of:

- using a layer 3 protocol stack within said network router to provide a plurality of data packets destined for a particular destination;
- transmitting said data packets from a first layer 1 communication interface over a primary data path and from a second layer 1 communication interface over a backup data path;
- transmitting each of said data packets to one of a plurality of layer 3 network interfaces within said network router;
- detecting an error condition associated with said primary data path;
- transmitting said data packets from said one layer 3 network interface to a plurality of layer 2 protocol stacks within said network router; and
- controlling which of said layer 2 protocol stacks receives each of said data packets based on said detecting step,

wherein each of said data packets received by a first one of said layer 2 protocol stacks is transmitted over said primary data path and each of said data packets received by a second one of said layer 2 protocol stacks is transmitted over said backup data path.